

## ABSTRACT OF THE DISCLOSURE

Magnetic field and/or electrical current imaging systems utilizing magneto-optical indicator films (MOIF) based on magneto-optical material with in-plane single easy axis type of magnetic anisotropy provide improved magnetic field resolution and dynamic range with the use of specific illumination conditions. Methods that provide the two-dimensional distribution of the external magnetic field vectors are disclosed together with the methods of extraction of said information. The visualizing systems offer high spatial resolution and/or high magnetic field resolution combined with fast sampling rates and the capability of performing large-area imaging. The applications of such systems include nondestructive testing and damage assessment in metal structures via magnetic materials or induced currents, integrated circuit testing and quality control, general magnetic material and thin film research, permanent magnet quality control, superconductor research and many others.